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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appellant:	DETTMER	Examiner:	Swerdlow, D.
Serial No.:	08/699,844	Group Art Unit:	2644
Filed:	August 20, 1996	Docket No.:	LEGR.121US01
Title:	MICROPROCESSOR-CONTROLLED FULL-DUPLEX SPEAKERPHONE USING AUTOMATIC GAIN CONTROL		

CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited, **in triplicate**, in the United States Postal Service, as first class mail, in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on November 24, 2003.

By: Eric J. Curtin
Name: Eric J. Curtin

APPEAL BRIEF

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This is an Appeal Brief submitted pursuant to 37 C.F.R. §1.192 for the above-referenced patent application. Please charge Deposit Account 50-0996 (LEGR.121US01) in the amount of $320 for this brief in support of appeal as indicated in 37 C.F.R. §1.17(c). If necessary, authority is given to charge/credit the above-referenced Deposit Account additional fees/overages in support of this filing.

I. Real Party in Interest

The real party in interest is Legerity, Inc., having a place of business at 4509 Freidrich Lane, Austin, Texas 78744-1812 USA. The above-referenced application is presently assigned to Legerity, Inc.

II. Related Appeals and Interferences

There are no related appeals or interferences.

III. Status of Claims

Claims 1, 2, 4, 7-9 and 24-35 are presented for appeal. Claim 1 stands rejected under 35 U.S.C. § 102(b) in view of *Barron et al.* (U.S. Patent No. 5,357,567); claim 1 also stands rejected under 35 U.S.C. § 103(a) over *McCaslin* (U.S. Patent No. 5,668,794) in view of *Barron*; claim 2 stands rejected under 35 U.S.C. § 103(a) over *Barron* in view of *Chen et al.* (U.S. Patent No. 5,075,687); claim 4 stands rejected under 35 U.S.C. § 103(a) over *Barron* in view of *Chen et al.* and further in view of *Teitler et al.* (U.S. Patent No. 5,722,086); claims 7-9 and 24-34 stand rejected under 35 U.S.C. § 103(a) over *Barron* in view of *Teitler*. The previous rejection of claim 35 was withdrawn and therefore it is presumed allowable; however, the Advisory Action erroneously included claim 35 in connection with what would be a new rejection as addressed below.

The pending claims presented for appeal, as presently amended, may be found in the attached Appendix of Appealed Claims.

IV. Status of Amendments

The application was originally filed on August 20, 1996, and included 9 claims. A Preliminary Amendment was filed on May 13, 1997, prior to a first Office Action and added claims 10-23. The first Office Action dated November 18, 1997 indicated entry of the preliminary amendment. A first Office Action Response and Amendment was filed on March 18, 1998 in response to the first Office Action dated November 18, 1997, and canceled claims 3, 5, 6 and 10-19. A second Office Action Response with an amendment was filed on September 25, 1998 in response to the second Office Action dated June 26, 1998, which had indicated entry of the first amendment, amended claims 1, 2, and 7 and added claims 24-37. An Office Action Response After Final with an amendment was filed on March 26, 1999 in response to the Final Office Action dated December 29, 1998, which had indicated entry of the second amendment. An Advisory Action dated April 27, 1999 indicated that the amendment after-final was not entered, thereafter a Notice of Appeal was filed May 25, 1999. An Appeal Brief was filed on August 25, 1999; the claims under appeal were 1, 2, 4, 7-9 and 20-37. An Examiner's Answer was mailed on November 24, 1999. A Decision on Appeal was mailed on August 27, 2002, in which the rejection of claims 2, 4, 7-9 and 24-37 was reversed, and in which the rejection of claims 20-23 was affirmed.

After the Decision on Appeal, prosecution was reopened and a non-final Office Action was mailed on February 19, 2003, and an Office Action Response and Amendment was filed in response thereto on April 30, 2003. In the aforementioned Response, claims 20-23 were canceled and claims 1, 2, 8, 24 and 35 were amended. A Final Office Action was mailed on June 23, 2003 and an Office Action Response and Amendment after Final was filed in response thereto on August 14, 2003 and included the cancellation of claims 36 and 37. An Advisory Action was mailed on September 2, 2003 and indicated that the Section 112 rejections and the Section 103 rejections of claims 24 and 35 over McCaslin in view of Teitler were withdrawn; the remaining rejections of claims 1-2, 4, 7-9, and 24-35 were, however, maintained. A Notice of Appeal was filed on September 23, 2003.

The claims as finally amended are attached hereto as an Appendix.

V. Summary of Invention

Appellant's invention is directed to subject matter including speakerphones and approaches for operation thereof. In a more particular aspect, volume control is effected in a full-duplex speakerphone as a function of volume levels including peak volume levels in one or more speech paths for duplex communication.

In one example embodiment, a full duplex portable handset speakerphone is operated in a manner that includes attenuating a signal for duplex conversation. In one implementation, the speakerphone includes a hands-free receive register (34 of FIG. 1, page 4, line 11), a hands-free transmit register coupled to the microprocessor (36 of FIG. 1, page 4, line 12), a memory circuit (38 of FIG. 1, page 4, line 13-14), a first analog-to-digital converter coupled to the hands-free receive register (32 of FIG.1, page 4, line 10), a second analog-to-digital converter coupled to the hands-free transmit register (32 of FIG, 1, line 10), a first programmable digital attenuator in a speech path and coupled to a microprocessor and to a speaker (52 of FIG.1, page 4, line 18), and a second programmable digital attenuator in another speech path and coupled to the microprocessor and to a microphone (54 of FIG. 1, page 4, line 18). The microprocessor determines peak volume levels in both speech paths (in full duplex, or two-way, speech processing) and adjusts gain levels in the speech paths in response to the peak volume levels (page 4, lines 24-27).

Another example embodiment of the present invention is directed to subject matter including a speakerphone with a microprocessor that determines peak volume levels in two speech paths for full duplex communications. Programmable digital attenuators are adjusted in response to the peak volume levels (38 of FIG. 1, page 4, lines 13-19; 24-27). In another embodiment, the speakerphone achieves duplex communication using a microprocessor to determine peak volume levels in both speech paths in a full duplex communications approach. Programmable digital attenuators are adjusted in response to the peak volume levels (38 of FIG. 1, page 4, lines 13-19; 24-27). In one implementation, microphone and speaker gains are digitally adjusted in relation to the peak volume levels in a duplex communications path in connection with reading hands-free registers (16 of FIG. 1, page 4, lines 25-26; Fig 2, page 5, lines 24-28).

VI. Issues for Review

Issue 1: Should the Section 102 rejection of claim 1 be maintained when the cited reference fails to completely correspond to every limitation of the rejected claims?

Issue 2: Should the rejections of the appealed claims relying upon the '567 (Barron) reference be maintained when the Examiner presented an improper inherency-type argument without citing evidence in support thereof?

Issue 3: Should the Section 103 rejection of claim 1 be maintained when the Examiner failed to meet the requirements for establishing a *prima facie* case of obviousness?

Issue 4: Should the Section 103 rejections of claims 2 and 4 be maintained when the Examiner failed to meet the requirements for establishing a *prima facie* case of obviousness?

Issue 5: Should the Section 103 rejections of claims 7-9 and 24-34 be maintained when the Examiner failed to meet the requirements for establishing a *prima facie* case of obviousness?

Issue 6: Should the erroneous rejection of claim 35 under Section 103 over the '567 (Barron) reference in view of the '086 (Teitler) reference be maintained when the rejection was newly introduced in the Advisory Action?

Issue 7: Should the rejections of the appealed claims relying upon the '567 reference be maintained when the Examiner failed to provide the Appellant with the necessary evidence for evaluating the merits of the rejection?

VII. Grouping of Claims

The claims as now presented do not stand and fall together and are separately patentable for the reasons discussed in the Argument. For purposes of this appeal, the claims are grouped as follows: claim 1 is in Group 1, claims 2 and 4 are in Group 2, claims 7-9 are in Group 3, claims 24-28 and 32 are in Group 4, claims 29-31 and 33-34 are in Group 5 and claim 35 is in Group 6.

VIII. Argument

Appellant submits that the claims of Groups 1-6 are patentably distinguishable from each other and from the cited prior art references. The claim in Group 1 is patentable over the prior art because it is directed to subject matter that includes adjusting gain levels in speech duplex speech paths in response to peak volume levels determined from alternately-received speech signals, which is not taught or suggested by any of the references cited. The claims of Group 2 are separately patentable over the other claim groups because they are directed to subject matter that includes a portable handset with full-duplex adjustable attenuation, which is not necessarily present in the other claim groups and not taught by the cited prior art. The claims of Group 3 are separately patentable over the other claim groups because they are directed to subject matter that includes operating a duplex speakerphone using a ROM for programming a microprocessor in connection with adjusting gains in response to peak volume levels of both speech paths for duplex communication, which is not necessarily present in the other claim groups and not taught by the cited prior art. The claims of Group 4 are separately patentable over the other claim groups because they are directed to subject matter that includes controlling first and second programmable digital level-adjustors to control the gains of speech paths during full duplex operation, which is not necessarily present in the other claim groups and not taught by the cited prior art. The claims of Group 5 are separately patentable over the other claim groups because they are directed to subject matter that includes a logic decision circuit operating in full duplex substates, which is not necessarily present in the other claim groups and not taught by the cited prior art. The claim of Group 6 is separately patentable over the other claim groups because it is directed to subject matter that includes controlling gains in first and second speech

paths during full duplex operation by controlling first and second level-adjustment means, which is not necessarily present in the other claim groups and not taught by the cited prior art.

Issues 1-8 as presented below are discussed in detail. However, Appellant submits that finding in favor of the Appellant for any one of Issues 1, 2 or 3 would require that all of the claim rejections be reversed. Specifically, Issue 1 is directed to the failure of the '567 reference to teach limitations that are relied upon in making all of the claim rejections. Issue 2 is directed to the impropriety of an inherency-type argument regarding the teaching of the '567 reference that is relied upon by the Examiner in making all of the claim rejections. Issue 8 is directed to the Examiner's failure to provide the Appellant with sufficient evidence necessary to evaluate the merits of the rejection as applicable to the '567 reference and all of the claim rejections.

Issue 1: The Section 102 rejection of claim 1 should be reversed because the cited reference fails to completely correspond to every limitation of the rejected claims.

The Section 102 rejection of claim 1 in Group 1 should be reversed because the cited portions of the '567 (Barron) reference do not completely correspond to the claimed limitations directed to adjusting gain levels in alternately-received duplex speech paths as a function of peak volume levels. In contrast to these claimed limitations, the '567 reference is limited to a speakerphone operation approach in which speech flows in only one direction at a time (*i.e.*, half-duplex operation). While the half-duplex approach of the '567 reference may be implemented using a full-duplex signal communications channel, the processing and operation characteristics thereof as cited by the Examiner are clearly limited to half-duplex operation as discussed in detail below. The Examiner's assertions including those on page 3 of the Advisory Action alleging "inherent" full-duplex operation are thus unsupported and are furthermore contrary to the purpose of the '567 reference.

As discussed in the Final Office Action Response, the purpose of the '567 reference is limited to switching between transmit mode and receive mode for half-duplex operation (*see, e.g.*, column 10, line 67 through column 11, line 4). More specifically, as discussed at column 4, lines 22-25, the '567 reference is directed to addressing problems with half-duplex communications in order to avoid "clipping" speech in half-duplex operation. Also in column 4, at lines 32-37, the '567 reference discusses "reducing the probability of ... maintaining the talk mode ... [and] switching to listen mode while relatively quiet speech is occurring." These

problems involving switching between talk and listen modes (which are concurrent in full-duplex communications) are clearly associated with half-duplex operation. Therefore, the '567 reference is directed to a speakerphone in which speech signals cannot be processed by alternately examining transmit and receive speech paths in a manner as claimed in claim 1 (and further as applicable to other claims, discussed in the Issues below).

In regard to the specific portions of the '567 reference cited in the Final Office Action, the Examiner's Section 102(b) rejection of claim 1 is based on an improper interpretation of the '567 reference's speech-signal evaluation "iterative" process. As described in connection with Figure 9 at columns 8 and 9, the '567 reference explains its iterative process as providing an estimation of speech in one (transmit or receive) speech path at a time. At column 10, lines 6-16, the '567 reference summarizes how this iterative calculation (based on equation No. 1) is advantageous for effecting rapid channel turn-around that is not part of full-duplex communication. Therefore, the processing approaches involving the cited portions of the '567 reference are all clearly directed toward half-duplex operation, even wherein such half-duplex operation could occur over a full-duplex channel. In this regard, the disclosed half-duplex operation of the '567 reference cannot anticipate the duplex (*i.e.*, full-duplex) limitations of the present invention.

Moreover, the Examiner has not shown how the half-duplex processing and operation approach of the '567 reference could be used for full-duplex operation as purported in the Final Office Action. For example, the Examiner asserts that the '567 reference "necessarily and inherently passes through a mode of operation in which the attenuation on both channels is at a level that allows both the near-end and far-end talkers to talk and hear simultaneously." In addition to presenting an improper inherency-type argument (addressed in Issue 2), this assertion does not explain how such full-duplex operation could be effected with the cited half-duplex processing approach. Specifically, the Examiner has not shown how the '567 reference would allow "near-end and far-end talkers to talk and hear simultaneously" because the cited portions of the '567 reference are all limited to only one mode (talk or hear) at a time. Instead of achieving duplex operation, the adjustment of a gain level in response to peak signal levels using the cited portions of the '567 reference would result in half-duplex communications (*see, e.g.*, column 4, lines 65-66 and column 5, lines 3-7).

With a proper understanding of the speakerphone teachings of the '567 reference, the limitations of claim 1 of the instant application should be better appreciated. These limitations are directed to a microprocessor that "alternately" receives speech signals in the respective speech paths" and processes these speech signals for duplex operation. The '567 reference teachings (regarding an iterative process) plainly do not correspond to the above limitations involving "alternately receiving the signals...." Therefore, these cited portions of the '567 reference could not apply to the limitations of claim 1, which are directed to full-duplex operation.

In view of the above, the Examiner has not provided prior-art correspondence to the above-described claim limitations in the manner required for establishing and maintaining a Section 102(b) rejection. Therefore, Appellant requests that the Section 102(b) rejection be reversed.

Issue 2: The rejections of the appealed claims, all of which rely upon asserted teachings in the '567 reference, should be reversed because the Examiner presented an improper inherency-type argument without citing evidence in support thereof.

The rejections of all of the appealed claims in all of the claim groups that rely upon the '567 (Barron) reference should be reversed because the Examiner presented several improper inherency-type arguments, without providing any evidence in support of the asserted inherent subject matter. In an attempt to find a corresponding element to Appellant's claimed limitations, the Examiner improperly asserted on page 6 of the Final Office Action that the '567 reference "inherently passes through a mode of operation in which the attenuation on both channels ... allows both the near-end and far-end talkers to talk and hear simultaneously." The Examiner also made other inherency-type arguments, without supporting evidence, in connection with other claim limitations near the bottom of page 6, on page 11 (asserting that software timers are well known), on page 14 and on page 17 of the Final Office Action. The rejections based upon these inherency-type arguments cannot, however, be maintained when the reference does not teach the allegedly inherent subject matter and without any extrinsic evidence supporting the allegation of inherency. To establish inherency, the extrinsic evidence "must make clear that the missing descriptive matter *is necessarily present in the thing described in the reference*, and that it would be so recognized by persons of ordinary skill." *Continental Can Co. v. Monsanto Co.*, 948 F.2d 1264, 1268, 20 U.S.P.Q.2d 1746, 1749 (Fed. Cir. 1991) (emphasis added). "Inherency,

however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient." *Id.* at 1269, 20 U.S.P.Q.2d at 1749 (quoting *In re Oelrich*, 666 F.2d 578, 581, 212 U.S.P.Q. 323, 326 (C.C.P.A. 1981). In this instance, not only did the Examiner fail to provide any extrinsic evidence in support of the inherency-type argument, the asserted inherent elements cannot be necessarily present in the '567 reference because the inclusion of such a full-duplex operation is contrary to the purpose of the '567 reference.

The primary object of the '567 reference is to process half-duplex signals as discussed above in connection with Issue 1. Moreover (also as discussed above in Issue 1), Appellant has searched the '567 reference and cannot ascertain how the cited processing approaches could be applied for full-duplex communications because they are implemented to effect half-duplex operation. Using the cited processing approaches of the '567 reference would control audio communications in a half-duplex mode. Therefore, the Section 102 and 103 rejections of all of the appealed claims in all of the claim groups that rely upon this improper and unsupported inherency-type argument must be reversed.

Issue 3: The Section 103 rejection of claim 1 should be reversed because the Examiner failed to meet the requirements for establishing a *prima facie* case of obviousness.

The Section 103(a) rejection of claim 1 of Group 1 over the '794 (McCaslin) reference in view of the '567 (Barron) reference should be reversed because the Examiner failed to establish a *prima facie* case of obviousness. As indicated in the M.P.E.P., to establish a *prima facie* case of obviousness the prior art reference (or references when combined) must teach or suggest all of the claimed limitations. The M.P.E.P. further indicates that there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. In this instance, the Examiner failed to show complete correspondence between the cited portions of the references and all of the claimed limitations as discussed above in connection with the '567 reference and as further discussed below. In addition, the Examiner failed to provide any evidence of motivation for modifying the '794 reference, and the proposed modification of the '794 reference would further undermine its purpose of providing full-duplex processing (thus the proposed modification is unmotivated).

In an apparent attempt to overcome the deficiencies of the '794 reference relative to the claimed limitations of the instant invention, the Examiner simply stated that the "microprocessor, memories and algorithm storage taught by Barron" could be applied to the echo suppresser taught by the '794 reference. However, the Examiner has not shown how the '794 reference would be modified to include these limitations and thus has not shown how all of the cited elements would work together as claimed. Moreover, as discussed in connection with Issue 1 above, the half-duplex approach of the '567 reference fails to correspond to the limitations in claim 1. This deficiency in the '567 reference also applies here in the Section 103 rejection because the Examiner improperly relied upon the '567 for the same teaching. Therefore, adding the "microprocessor, memories and algorithm storage taught by Barron" to the '794 reference still does not provide correspondence to all of the claimed limitations. In this regard, the Examiner has not met the Section 103 requirement that the cited references must teach all of the claim limitations.

The Examiner also failed to cite any evidence in support of the assertion that the proposed modification of the '794 reference would be motivated. Specifically, the Examiner asserted that, because the purpose of the modification is to implement "the echo suppresser in a physical platform" one of skill in the art would be motivated to do so. These mere allegations of motivation made in hindsight and without any supporting evidence do not meet the evidence requirement for establishing a *prima facie* Section 103 rejection. *See, e.g., In re Dembiczak*, 175 F.3d 994, 50 USPQ2d 1614 (Fed. Cir. 1999). *See also In re Fine*, 837 F.2d 1071, 1075, 5 USPQ2d 1596, 1600 (Fed. Cir. 1988) (evidence of teaching or suggestion "essential" to avoid hindsight). In this instance, the Examiner's conclusion that one of skill in the art would look to modify the '794 reference in this manner lacks evidence that shows why one of skill in the art would be motivated to embody the echo suppresser in the manner suggested by the Examiner. Therefore the Section 103 rejection fails to meet the requirements for establishing a *prima facie* Section 103 rejection.

Moreover, the proposed modification would undermine the purpose of the relied-upon embodiment of the '794 reference. Where a proposed modification of a primary reference would undermine its purpose, there is no motivation to make the modification (*see, e.g., In re Gordon*, 733 F.2d 900 (Fed. Cir. 1984)). The Examiner's assertions on page 4 of the Advisory Action that the test of obviousness is not "whether the features of a secondary reference may be bodily

incorporated into the structure of the primary reference" is contrary to applicable case law. Rather, such bodily incorporation goes to the essence of establishing what one of skill in the art would be motivated to do and is at the backbone of the requirement that evidence showing such motivation must be provided. If features cannot be incorporated into a primary reference (*e.g.*, because the incorporation would frustrate the purpose of the reference), then there is cannot be any motivation to make the incorporation.

In this instance, the cited embodiment of the '794 reference is directed to a full-duplex system and further directed to avoiding the use of an adaptive echo-suppressing filter due to the expense of implementation. *See, e.g.,* column 3, lines 35-40. The proposed modification would result in the expensive programmed '567 processor (DSP56001), as well as the '567 memory circuit and its algorithm storage being inserted into the heart of the '794 system, with this new half-duplex-switching algorithm destroying the full-duplex purpose of the '794 reference. Moreover, the '794 reference teaches the utilization of the algorithm described at column 12, line 64 through column 13, line 14, with discrete circuitry (without a processor) being used to address the high speed data processing required to suppress the echo. Inserting the programmed '567 processor (DSP56001) as well as the '567 memory circuit and its algorithm storage into the heart of the '794 system would result in a much more expensive '794 system as well as replacing this '794 circuitry and algorithm. This proposed modification of the '794 reference would thus undermine its purpose and therefore is unmotivated.

In view of the above, the Examiner failed to show correspondence between the cited references and all of the claimed limitations, failed to provide evidence in support of the asserted modification of the '794 reference and relies upon a proposed modification that would undermine the purpose of the '794 reference. Therefore, Appellant submits that a *prima facie* Section 103 rejection has not been established and requests that the rejection be reversed.

Issue 4: The Section 103 rejections of claims 2 and 4 should be reversed because the Examiner failed to meet the requirements for establishing a *prima facie* case of obviousness.

The Section 103 rejections of claims 2 and 4 (Group 2) over the '567 (Barron) reference in view of the '687 (Chen) reference should be reversed because the Examiner failed to establish a *prima facie* case of obviousness. Specifically, the cited references fail to teach or suggest all of the claimed limitations and there is no motivation to modify the primary reference. As discussed

above in connection with Issue 3, the M.P.E.P. requires that these Section 103 requirements be shown in order to establish a *prima facie* case of obviousness.

The Section 103 rejections of claims 2 and 4 rely upon the Examiner's improper interpretation of the '567 reference as purportedly teaching limitations directed to full-duplex signal processing; thus, the cited references fail to teach or suggest every claimed limitation. Specifically, as discussed above in connection with Issues 1 and 3, the '567 reference not only fails to teach or suggest subject matter directed to duplex operation, it teaches away from duplex operation in the context of the present invention. Instead, the '567 reference is limited to an approach for processing signals for half-duplex operation. Referring specifically to claim 2, the cited portions of the '567 reference fail to teach or suggest controlling gains by adjusting programmable digital attenuators wherein "duplex communication is achieved."

The Examiner also failed to meet the motivation requirement for establishing a *prima facie* Section 103 rejection because evidence of motivation was not provided and because the asserted modifications would undermine the purpose of the primary '567 reference, as discussed above in Issue 3. Specifically regarding independent claim 2, the Examiner failed to cite any evidence in support of modifying the '567 reference "for the purpose of increasing the signal-to-noise ratio of the input to the analog-to-digital converter." The Examiner drew a general conclusion regarding this alleged purpose without citing any evidence in support of modifying the '567 reference in the proposed manner. Moreover, the Examiner failed to even assert any reason as to why the modifying the '567 reference to increase the signal-to-noise ratio would be beneficial or to explain how such a modification could be made. Claim 4 is directed to limitations related to similar subject matter, the rejection of which relies upon similar unmotivated modification of the primary '567 reference. The rejection of claim 4 is further unmotivated because the Examiner failed to cite evidence in support of further modifying the '567 reference with the '086 (Teitler) reference. In this regard, Appellant submits that the Examiner failed to present a *prima facie* case of obviousness and that the section 103 rejections of claims 2 and 4 in Group 2 should be reversed.

Issue 5: The Section 103 rejections of claims 7-9 and 24-34 should be reversed because the Examiner failed to meet the requirements for establishing a *prima facie* case of obviousness.

The Section 103 rejections of claims 7-9 (Group 3) and 24-34 (Groups 4 and 5) over the '567 (Barron) reference in view of the '086 (Teitler) reference should be reversed because the Examiner failed to establish a *prima facie* case of obviousness. Specifically, the cited references fail to teach or suggest all of the claimed limitations and there is no motivation to modify the primary reference. As discussed above in connection with Issues 3 and 4, the M.P.E.P. requires that these Section 103 requirements be shown in order to establish a *prima facie* case of obviousness.

The Section 103 rejections of claims 7-9 and 24-34 rely upon the Examiner's improper interpretation of the '567 reference as teaching limitations directed to full-duplex signal processing and, as such fail to teach or suggest every claimed limitation. Specifically, as discussed above in connection with Issues 1 and 3, the '567 reference fails to show these limitations and furthermore teaches away from duplex operation in the context of the present invention. Instead, the '567 reference is limited to an approach to processing signals for half-duplex operation. For instance, regarding claim 24 (Group 4), the Examiner failed to cite any portion of the '567 reference that teaches or suggests controlling gains "during full duplex operation" because, as discussed above, the '567 reference controls gains for the purpose of half-duplex operation. Regarding claim 29 (Group 5), the Examiner has not cited any teaching or suggestion for the allegedly inherent limitations directed to "operation in a plurality of incrementally different full duplex states." Further regarding claim 29 as well as claims 30, 31, 33 and 34 (Group 5), the Examiner has not cited nor can the Appellant ascertain, where the cited references teach limitations directed to full duplex substates in the manner claimed in the present invention. Instead, the Examiner again relies upon an inherency-type argument that is improper for the reasons stated in connection with Issue 2 above.

The Section 103 rejections of claims 7-9 (Group 3) and 24-34 (Groups 4 and 5) also lack motivation because the Examiner failed to provide evidence of any motivation and further because the asserted modifications would undermine the purpose of the primary '567 reference. As discussed in Issue 3 above, the Examiner failed to provide evidence of motivation for modifying the '567 reference for full-duplex operation and modifying the '567 reference in the asserted manner will undermine its purpose. In addition, the Examiner also failed to cite any evidence in support of the proposed modification of the '567 reference in connection with other claim limitations. For instance, referring to pages 11 and 14 of the Final Office Action and in

connection with independent claims 7 and 24, the Examiner's asserted motivation was simply that it would have been obvious to modify the '567 reference "for the purpose of making the speakerphone cordless." However, in making this assertion the Examiner drew a general conclusion without citing any evidence in support of the conclusion. Moreover, the Examiner failed to even assert any reason (cited or otherwise) as to why the approach of the '567 reference should be made cordless or to explain how such a modification could be made to the '567 reference.

In view of the above, Appellant submits that the Examiner failed to present a *prima facie* case of obviousness and that the section 103 rejections of claims 7-9 (Group 3) and 24-34 (Groups 4-5) should be reversed.

Issue 6: The erroneous rejection of claim 35 under Section 103 over the '567 (Barron) reference in view of the '086 (Teitler) reference should be reversed because the rejection was newly introduced in the Advisory Action and is therefore improper.

Appellant assumes claim 35 to be allowable in view of the Advisory Action's removal of the only Section 103(a) rejection of the claim in the Final Office Action. However, the Advisory Action included an apparent error in mentioning a rejection of claim 35 Section 103(a) as being unpatentable over the '567 (Barron) reference in view of the '086 (Teitler) reference. Appellant submits that this suggested rejection cannot stand because the rejection was first mentioned in the Advisory Action and was not supported with any evidence or discussion whatsoever in the Final Office Action. Should any new rejection of claim 35 have been offered in the Advisory Action, Appellant submits that the rejection must be reversed.

In view of the above, Appellant assumes either that the Advisory Action included a mistake as to the rejection of claim 35 and further that claim 35 is allowable or, in the alternative, that any new rejection proposed in the Advisory Action is improper and must therefore be reversed.

Issue 7: The rejections of the appealed claims relying upon the '567 reference should be reversed because the Examiner failed to provide the Appellant with the necessary evidence for evaluating the merits of the rejection.

All of the rejections relying upon the '567 (Barron) reference should be reversed because the Examiner failed to completely disclose the evidence cited in support of the rejection to

Appellant in a manner as required by 35 U.S.C. §132 and other applicable resources as discussed further below. For example, the '567 reference describes the operation of its preferred embodiment through the use of an appendix that is attached and forms part of the specification. As indicated at column 10, lines 47-50, the '567 reference identifies this portion of the disclosure as "Appendix A." Based on the above discussion, Appellant submits that a review of this "Appendix A" would further corroborate Appellant's contentions.

In an apparent attempt to address this issue, the Examiner asserted in the Advisory Action that the portion of the '567 reference provided to the Appellant was sufficient because it was "the entirety of that maintained in the classified search file," citing M.P.E.P.§707.05(a). While providing the Appellant "the entirety of that maintained in the classified search file" may be applicable to this portion of the M.P.E.P., it does not relieve the Examiner of the responsibility to provide the Appellant with evidence as required by Section 132. Specifically, Section 132 explains that whenever any claim for a patent is rejected, the Applicant shall be notified of the rejection along with a statement of the reasons for such rejection, "together with such information and references as may be useful in judging of the propriety of continuing the prosecution of his application." By presenting only a portion of the '567 reference (without Appendix A), Appellant submits that the Examiner has failed to comply with Section 132 in making the claim rejections in reliance upon the '567 reference. Other federally-mandated regulations impose a similar degree of fairness. For instance, in connection with Applicant's submission of a foreign prior art reference, the Patent Office would demand that any available or necessary English translation be included so that the value of the citations may be readily determined by persons inspecting the patent files and by the examiner (*see, e.g.*, M.P.E.P. § 2205). Similarly, the Federal Rules of Evidence state that an adverse party can require the party introducing a writing to introduce other portions or the entirety of the writing so that the complete context can be dealt with in fairness (*see, e.g.*, FRE 106). The purpose of Section 132 and these federally-mandated regulations is to provide all interested parties a complete opportunity to review and address the facts at issue. In this instance, basing the rejections on the '567 reference (with such an interpretation) highlights the need for compliance with the patent statute and these federally-mandated regulations.

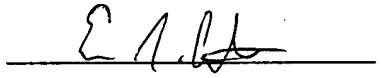
Without the full text of the '567 reference, the claim rejections relying upon the '567 reference are improper. Therefore, Appellant requests that all of the remaining rejections, each of which relies upon the '567 reference, be reversed.

IX. Conclusion

In view of the above, Appellant believes the claimed invention to be patentable and that the rejections of claims 1, 2, 4, 7-9 and 24-35 are improper. Appellant respectfully requests reversal of the rejections as applied to the appealed claims and allowance of the entire application. Authority to charge our deposit account was provided on the first page of this brief.

Respectfully submitted,

CRAWFORD MAUNU PLLC
1270 Northland Drive, Suite 390
Saint Paul, MN 55120
651.686.6633



Name: Robert J. Crawford
Reg. No. 32,122
Eric J. Curtin; Reg. No. 47,511

APPENDIX OF APPEALED CLAIMS

U.S. Patent Application Serial No. 08/699,844 (LEGR.121US01)

1. A duplex portable handset speakerphone, comprising:

a microprocessor;

a hands-free receive register coupled to the microprocessor;

a hands-free transmit register coupled to the microprocessor;

a memory circuit having an algorithm executable by the microprocessor for operating the speakerphone;

a first analog-to-digital converter coupled to the hands-free receive register;

a second analog-to-digital converter coupled to the hands-free transmit register;

a first programmable digital attenuator in a speech path and coupled to the microprocessor and to a speaker;

a second programmable digital attenuator in another speech path and coupled to the microprocessor and to a microphone;

wherein the microprocessor alternately receives speech signals in the respective speech paths and determines peak volume levels in both speech paths and adjusts gain levels in the speech paths in response to the peak volume levels.

2. A speakerphone system comprising:

a full duplex portable handset including

an integrated circuit controller chip having a microprocessor, an embedded hands-free receive register coupled to the microprocessor, an embedded hands-free transmit register coupled to the microprocessor, a pre-amplifier coupled to the microprocessor, and a codec having first and second programmable digital attenuators, the first programmable digital attenuator coupled to the microprocessor, and the second programmable digital attenuator coupled to the microprocessor, to the embedded hands-free transmit register, and to the pre-amplifier; wherein the microprocessor alternately receives speech signals in the respective speech paths and determines peak volume levels in both speech paths and adjusts the programmable digital attenuators in response to the peak volume levels and duplex communication is achieved.

4. The speakerphone system of claim 2, further including a base station comprising:
an integrated circuit controller chip comprising a codec;
a telephone line interface; and
a radio frequency interface.

7. A method of operating a duplex speakerphone by a microprocessor in a portable handset, without digital signal processing, the handset further including a ROM containing a stored operation algorithm for directing the microprocessor, hands-free transmit and receive registers, a microphone, a speaker, a first-speech path between the microphone and a radio frequency interface, and a second speech path between the speaker and the radio frequency interface, the method comprising the steps of:

a. directing the reading of the hands-free registers, and determining the peak volume levels of both speech paths; and

b. digitally adjusting the microphone and speaker gains in relation to the peak volume levels.

8. The method of claim 7, wherein the stored operation algorithm uses software timers and peak detection.

9. The method of claim 8, wherein a software time generates a hardware interrupt to the microprocessor on every speech frame so that one of the hands-free registers can be read by a software peak detector.

24. A speakerphone, comprising:
a base unit; and
a portable handset communicatively coupled to the base unit via a wireless channel, including
a microphone;
a speaker;
a first speech path to the speaker;
a second speech path to the microphone;

a first programmable digital level-adjustor adapted to be controlled to provide a gain adjustment along the first speech path;

a second programmable digital level-adjustor adapted to be controlled to provide a gain adjustment along the second speech path;

a logic decision circuit, coupled to the first and second programmable digital level-adjustors, adapted to alternately receive speech signals in the respective speech paths and determine regularly the respective peak amplitudes of signals in the first and second speech paths, and, in response, controlling the gains of the respective first and second speech paths during full duplex operation by controlling the first and second programmable digital level-adjustors.

25. A speakerphone arrangement, according to claim 24, wherein the logic decision circuit is a microprocessor circuit.

26. A speakerphone arrangement, according to claim 24, wherein the logic decision circuit is configured and arranged to dynamically regulate the balance of the speech paths during full duplex communication.

27. A speakerphone arrangement, according to claim 24, wherein the logic decision circuit is further adapted to implement automatic gain control and thereby regulate gain proportions along at least one of the two speech paths in a full duplex state.

28. A speakerphone arrangement, according to claim 24, wherein the logic decision circuit is further adapted to implement automatic gain control and thereby regulate gain proportions along both speech paths in a full duplex state.

29. A speakerphone arrangement, according to claim 24, wherein the logic decision circuit is further adapted to operate in a plurality of full duplex substates, each substate defining a different relationship between respective gains of the first and second speech paths.

30. A speakerphone arrangement, according to claim 29, wherein the substates include a first unbalanced gain relationship used in response to the speech volume of the first speech path that is less than the speech volume of the second speech path, and a second unbalanced gain relationship used in response to the speech volume of the first speech path that is greater than the speech volume of the second speech path.

31. A speakerphone arrangement, according to claim 29, wherein the substates include a balanced gain relationship, first unbalanced gain relationship used in response to the speech volume of the first speech path that is less than the speech volume of the second speech path, and a second unbalanced gain relationship used in response to the speech volume of the first speech path that is greater than the speech volume of the second speech path.

32. A speakerphone arrangement, according to claim 24, wherein the logic decision circuit is further adapted to implement automatic gain control using hysteresis and thereby regulate gain proportions along both speech paths a full duplex state.

33. A speakerphone arrangement, according to claim 24, wherein the logic decision circuit is further adapted to operate in a plurality of full duplex substates, each substate defining a different relationship between respective gains of the first and second speech paths, one of the substates include a balanced gain relationship, another substate including a first unbalanced gain relationship used in response to the speech volume of the first speech path that is less than the speech volume of the second speech path, and another substate including a second unbalanced gain relationship used in response to the speech volume of the first speech path that is greater than the speech volume of the second speech path.

34. A speakerphone arrangement, according to claim 24, wherein the logic decision circuit is further adapted to operate in a plurality of full duplex substates, with the logic decision circuit transitioning between substates in response to: the volume levels in the first and second speech paths, and the current substate.

35. A speakerphone arrangement including a microphone and a speaker, comprising:

a first speech path to the speaker;

a second speech path to the microphone;

a first level-adjustment means adapted to be controlled to adjust the volume along the first speech path;

a second level-adjustment means adapted to be controlled to adjust the volume along the second speech path;

means for alternately receiving speech signals in the respective speech paths and determining regularly the respective peak amplitudes of signals in the first and second speech paths, and in response controlling the gains of the respective first and second speech paths during full duplex operation by controlling the first and second level-adjustment means.